AMENDMENTS TO THE SPECIFICATION

Please replace the paragraphs of the specification beginning at page 3, line 3 and ending on page 7, line 23, with the following amended paragraphs:

--- According to an aspect of the present invention, an optical amplifier apparatus includes: a first front-end optical fiber amplifier that amplifies incident light; a first front-end pumping light source that generates first pumping light supplied to the first front-end optical fiber amplifier; a first front-end pumping light introducing [[unit]] section that introduces the first pumping light to the first front-end optical fiber amplifier; a first back-end optical fiber amplifier that amplifies outgoing light of the first front-end optical fiber amplifier; a second front-end optical fiber amplifier; a second front-end pumping light source that generates second pumping light supplied to the second front-end optical fiber amplifier; a second front-end pumping light introducing [[unit]] section that introduces the second pumping light to the second front-end optical fiber amplifier from an outgoing side which is opposite to an incident side; a second back-end optical fiber amplifier that amplifies outgoing light of the second front-end optical fiber amplifier; a back-end pumping light source that generates third pumping light supplied to the first back-end optical fiber amplifier; a back-end pumping light introducing [[unit]] section that introduces the third pumping light to the first back-end optical fiber amplifier; and an optical connecting [[unit]] section that (1) connects an outgoing side of the first back-end optical fiber amplifier and the back-end pumping light introducing [[unit]] section to each other, or (2) connects the outgoing side of the first back-end optical fiber amplifier and

the incident side of the second front-end optical fiber amplifier to each other and the outgoing side of the second back-end optical fiber amplifier and the back-end pumping light introducing section to each other, wherein the first front-end pumping light introducing section is disposed between the first front-end optical fiber amplifier and the first back-end optical fiber amplifier; and wherein the second front-end pumping light introducing section is disposed between the second front-end optical fiber amplifier and the second back-end optical fiber amplifier ~~thereby causing the second front-end optical fiber amplifier to amplify outgoing light of the first back-end optical fiber amplifier~~.

According to the thus constructed invention, a first front-end optical fiber amplifier amplifies incident light. A first front-end pumping light source generates first pumping light supplied to the first front-end optical fiber amplifier. A first front-end pumping light introducing [[unit]] section introduces the first pumping light to the first front-end optical fiber amplifier. A first back-end optical fiber amplifier amplifies outgoing light of the first front-end optical fiber amplifier. A second front-end pumping light source generates second pumping light supplied to the second front-end optical fiber amplifier. A second front-end pumping light introducing [[unit]] section introduces the second pumping light to the second front-end optical fiber amplifier from an outgoing side which is opposite to an incident side. A second back-end optical fiber amplifier amplifies outgoing light of the second front-end optical fiber amplifier. A back-end pumping light source generates third pumping light supplied to the first back-end optical fiber amplifier. A back-end pumping light introducing [[unit]] section introduces the third pumping light to the first back-end optical fiber amplifier. An optical connecting

[[unit]] section (1) connects an outgoing side of the first back-end optical fiber amplifier and the back-end pumping light introducing [[unit]] section to each other, or (2) connects the outgoing side of the first back-end optical fiber amplifier and the incident side of the second front-end optical fiber amplifier to each other and the outgoing side of the second back-end optical fiber amplifier and the back-end pumping light introducing section to each other, wherein the first front-end pumping light introducing section is disposed between the first front-end optical fiber amplifier and the first back-end optical fiber amplifier; and wherein the second front-end pumping light introducing section is disposed between the second front-end optical fiber amplifier and the second back-end optical fiber amplifier ~~thereby causing the second front-end optical fiber amplifier to amplify outgoing light of the first back-end optical fiber amplifier~~.

According to the present invention, it is preferable that the optical amplifier apparatus include a light blocking [[unit]] section that blocks light from the first back-end optical fiber amplifier from being provided to the first front-end optical fiber amplifier.

~~According to the optical amplifier apparatus of the present invention, it is preferable that the optical connecting unit may connect the outgoing side of the first back-end optical fiber amplifier and the incident side of the second front-end optical fiber amplifier to each other, and, simultaneously, the outgoing side of the second back-end optical fiber amplifier and the back-end pumping light introducing unit to each other.~~

According to the optical amplifier apparatus of the present invention, it is preferable that ~~if the optical connecting unit connects the outgoing side of the first back-end optical fiber amplifier and the back-end pumping light introducing unit to each other,~~ a gain of the first front-end optical fiber amplifier ~~may be as large as~~ is set so that a noise of the first back-end optical fiber amplifier can be neglected when the optical connecting section connects the outgoing side of the first back-end optical fiber amplifier and the back-end pumping light introducing section to each other.

According to the optical amplifier apparatus of the present invention, it is preferable that ~~if the optical connecting unit connects the outgoing side of the first back-end optical fiber amplifier and the incident side of the second front-end optical fiber amplifier to each other,~~ a combined gain of the gain of the first front-end optical fiber amplifier, a gain of the first back-end optical fiber amplifier, and a gain of the second front-end optical fiber amplifier ~~may be as large as~~ is set so that a noise of outgoing light of the second back-end optical fiber amplifier is approximately maintained when the optical connecting section connects the outgoing side of the first back-end optical fiber amplifier and the incident side of the second front-end optical fiber amplifier to each other.

According to the optical amplifier apparatus of the present invention, it is preferable that [[if]] when the optical connecting [[unit]] section connects the outgoing side of the first back-end optical fiber amplifier and the back-end pumping light

introducing [[unit]] section to each other, a wavelength band of the outgoing light of the first back-end optical fiber amplifier ~~may be~~ is C-band.

According to the optical amplifier apparatus of the present invention, it is preferable that [[if]] when the optical connecting [[unit]] section connects the outgoing side of the first back-end optical fiber amplifier and the incident side of the second front-end optical fiber amplifier to each other, a wavelength band of the outgoing light of the second back-end optical fiber amplifier ~~may be~~ is the L-band.

According to the optical amplifier apparatus of the present invention, it is preferable that at least one of the first front-end optical fiber amplifier, the first back-end optical fiber amplifier, the second front-end optical fiber amplifier, and the second back-end optical fiber amplifier is an Erbium-doped optical fiber.

According to the optical amplifier apparatus of the present invention, it is preferable that wavelengths of the light generated by the first front-end pumping light source, the second front-end pumping light source, and the back-end pumping light source are 980 nm.

~~According to the present invention, it is preferable that the optical amplifier apparatus may include: a third front-end optical fiber amplifier that amplifies the outgoing light of the second front-end optical fiber amplifier, and emits amplified light to the second back-end optical fiber amplifier; a third front-end pumping light source that~~

generates fourth pumping light supplied to the third front-end optical fiber amplifier; and a third front-end pumping light introducing unit that introduces the fourth pumping light to the third front-end optical fiber amplifier from an outgoing side which is opposite to an incident side.

According to another aspect of the present invention, an optical amplifier apparatus includes: a first optical fiber amplifier that amplifies incident light; a second optical fiber amplifier; a back-end pumping light source that generates pumping light supplied to the first optical fiber amplifier; a back-end pumping light introducing unit that introduces the pumping light to the first optical fiber amplifier; and an optical connecting unit that (1) connects an outgoing side of the first optical fiber amplifier and the back-end pumping light introducing unit to each other, or (2) connects the outgoing side of the first optical fiber amplifier and an incident side of the second optical fiber amplifier to each other thereby causing the second optical fiber amplifier to amplify the outgoing light of the first optical fiber amplifier.

According to the thus constructed invention, a first optical fiber amplifier amplifies incident light. A back-end pumping light source generates pumping light supplied to the first optical fiber amplifier. A back-end pumping light introducing unit introduces the pumping light to the first optical fiber amplifier. An optical connecting unit (1) connects an outgoing side of the first optical fiber amplifier and the back-end pumping light introducing unit to each other, or (2) connects the outgoing side of the first optical fiber amplifier and an incident side of the second optical fiber amplifier to each

~~other thereby causing the second optical fiber amplifier to amplify the outgoing light of the first optical fiber amplifier.~~

According to an aspect of the present invention, an optical amplifier apparatus includes: a first front-end optical fiber amplifier that amplifies incident light; a first front-end pumping light source that generates first pumping light supplied to the first front-end optical fiber amplifier; a first front-end pumping light coupler that introduces the first pumping light to the first front-end optical fiber amplifier; a first back-end optical fiber amplifier that amplifies outgoing light of the first front-end optical fiber amplifier; a second front-end optical fiber amplifier; a second front-end pumping light source that generates second pumping light supplied to the second front-end optical fiber amplifier; a second front-end pumping light coupler that introduces the second pumping light to the second front-end optical fiber amplifier from an outgoing side which is opposite to an incident side; a second back-end optical fiber amplifier that amplifies outgoing light of the second front-end optical fiber amplifier; a back-end pumping light source that generates third pumping light supplied to the first back-end optical fiber amplifier; a back-end pumping light coupler that introduces the third pumping light to the first back-end optical fiber amplifier; and an optical switch that (1) connects an outgoing side of the first back-end optical fiber amplifier and the back-end pumping light coupler to each other, or (2) connects the outgoing side of the first back-end optical fiber amplifier and the incident side of the second front-end optical fiber amplifier to each other and the outgoing side of the second back-end optical fiber amplifier and the back-end pumping light coupler to each other, wherein the first front-end pumping light coupler is disposed

between the first front-end optical fiber amplifier and the first back-end optical fiber amplifier; and wherein the second front-end pumping light coupler is disposed between the second front-end optical fiber amplifier and the second back-end optical fiber amplifier.

According to the thus constructed invention, a first front-end optical fiber amplifier amplifies incident light. A first front-end pumping light source generates first pumping light supplied to the first front-end optical fiber amplifier. A first front-end pumping light coupler introduces the first pumping light to the first front-end optical fiber amplifier. A first back-end optical fiber amplifier amplifies outgoing light of the first front-end optical fiber amplifier. A second front-end pumping light source generates second pumping light supplied to the second front-end optical fiber amplifier. A second front-end pumping light coupler introduces the second pumping light to the second front-end optical fiber amplifier from an outgoing side which is opposite to an incident side. A second back-end optical fiber amplifier amplifies outgoing light of the second front-end optical fiber amplifier. A back-end pumping light source generates third pumping light supplied to the first back-end optical fiber amplifier. A back-end pumping light coupler introduces the third pumping light to the first back-end optical fiber amplifier. An optical switch (1) connects an outgoing side of the first back-end optical fiber amplifier and the back-end pumping light coupler to each other, or (2) connects the outgoing side of the first back-end optical fiber amplifier and the incident side of the second front-end optical fiber amplifier to each other and the outgoing side of the second back-end optical fiber amplifier and the back-end pumping light coupler to each other, wherein the first front-

end pumping light coupler is disposed between the first front-end optical fiber amplifier and the first back-end optical fiber amplifier; and wherein the second front-end pumping light coupler is disposed between the second front-end optical fiber amplifier and the second back-end optical fiber amplifier.

According to the present invention, it is preferable that the optical amplifier apparatus include an optical isolator that blocks light from the first back-end optical fiber amplifier from being provided to the first front-end optical fiber amplifier.

According to the optical amplifier apparatus of the present invention, it is preferable that a gain of the first front-end optical fiber amplifier is set so that a noise of the first back-end optical fiber amplifier can be neglected when the optical switch connects the outgoing side of the first back-end optical fiber amplifier and the back-end pumping light coupler to each other.

According to the optical amplifier apparatus of the present invention, it is preferable that a combined gain of the gain of the first front-end optical fiber amplifier, a gain of the first back-end optical fiber amplifier, and a gain of the second front-end optical fiber amplifier is set so that a noise of outgoing light of the second back-end optical fiber amplifier is approximately maintained when the optical switch connects the outgoing side of the first back-end optical fiber amplifier and the incident side of the second front-end optical fiber amplifier to each other.

According to the optical amplifier apparatus of the present invention, it is preferable that a wavelength band of the outgoing light of the first back-end optical fiber amplifier is the C-band when the optical switch connects the outgoing side of the first back-end optical fiber amplifier and the back-end pumping light coupler to each other.

According to the optical amplifier apparatus of the present invention, it is preferable that a wavelength band of the outgoing light of the second back-end optical fiber amplifier is the L-band when the optical switch connects the outgoing side of the first back-end optical fiber amplifier and the incident side of the second front-end optical fiber amplifier to each other.

According to the optical amplifier apparatus of the present invention, it is preferable that at least one of the first front-end optical fiber amplifier, the first back-end optical fiber amplifier, the second front-end optical fiber amplifier, and the second back-end optical fiber amplifier is an Erbium-doped optical fiber.

According to the optical amplifier apparatus of the present invention, it is preferable that wavelengths of the light generated by the first front-end pumping light source, the second front-end pumping light source, and the back-end pumping light source are 980 nm.

According to the optical amplifier apparatus of the present invention, it is preferable that the optical amplifier apparatus include a third front-end optical fiber

amplifier that amplifies the outgoing light of the second front-end optical fiber amplifier, and emits amplified light to said second back-end optical fiber amplifier; a third front-end pumping light source that generates fourth pumping light supplied to the third front-end optical fiber amplifier; and a third front-end pumping light coupler that introduces the fourth pumping light to said third front-end optical fiber amplifier from an outgoing side which is opposite to an incident side. ---